Control of Alignment Configurations of Graphene Oxide Suspension in Confined Spherical Shape Environment

이주영, 유필진†
성균관대학교
(pjyoo@skku.edu†)

2D materials such as graphene oxide (GO) with anisotropic properties are known to have liquid crystal (LC) properties in their suspension. Furthermore, understanding and control of the alignment configurations of LC materials in confined geometries are fundamental study for practical applications using the alignment properties of LC materials. However, few reports of alignment properties in confined geometry of 2D LC materials have been made. Therefore, in this work, we understood and controlled the alignment configurations of GO suspension in confined spherical shape geometry. Also, to control the constrained volume, the microfluidic system was used to increase the controllability of space. Within these spherical shape droplets, GO suspension has concentric, transition state, and bipolar configurations depending on the GO concentration, constrained volume, and size of GO sheet. These results can help to understand the alignment properties of suspension of 2D materials in confined space and increase of alignment configuration selectivity by controlling factors can present a novel platform of functional materials fabrication with controlled structure and properties based on it.